

# AGILE

*Geospatial Intelligence at Lightning Speed...*

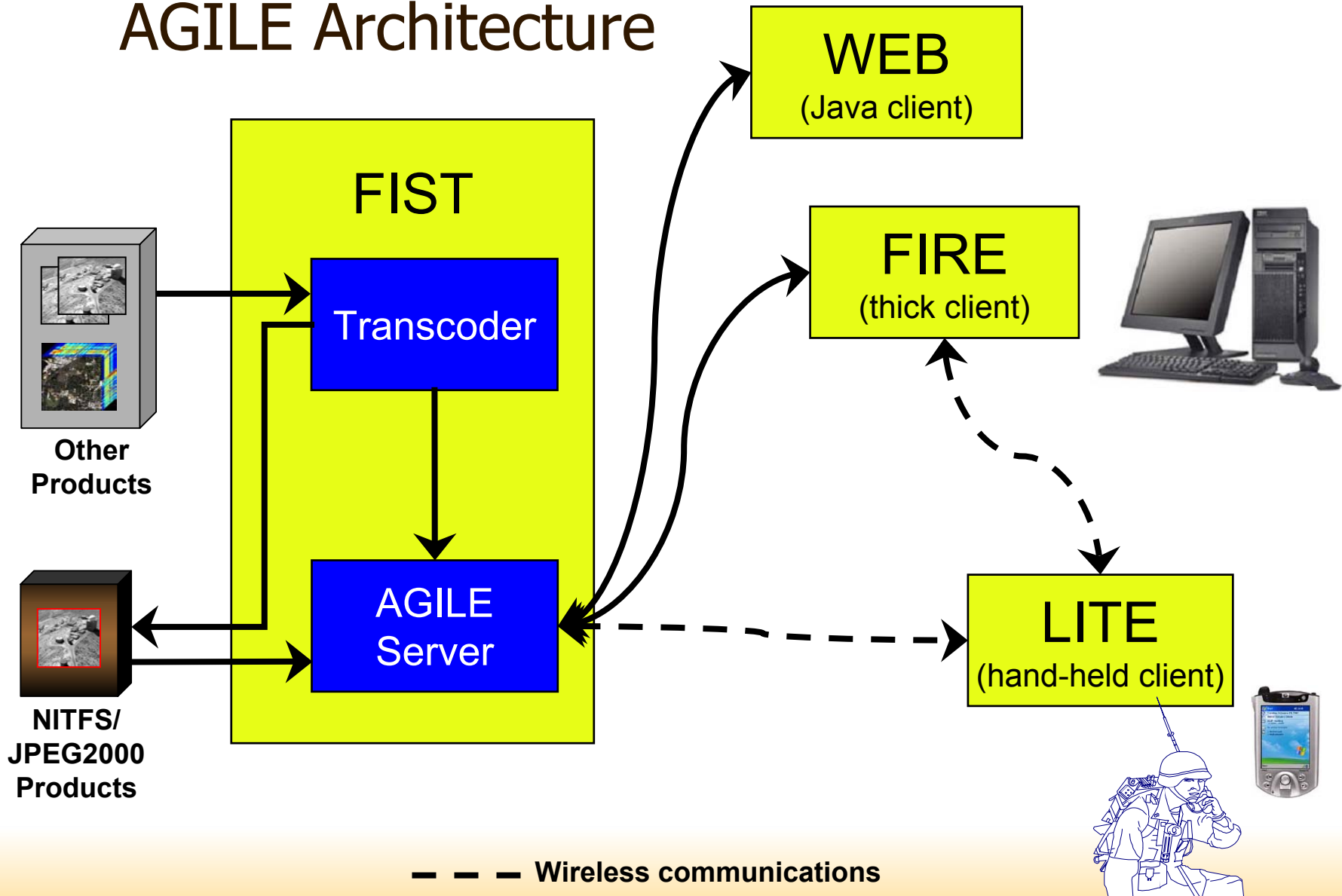
# What is AGILE?

- Advanced Geospatial Image Library Enterprise
  - A suite of COTS imagery compression, dissemination, and exploitation products and supporting engineering services
- AGILE enables a transformational imagery architecture
  - On-demand, interactive delivery of imagery
    - User-specified resolution, quality layer, and ROI delivery
  - Ability for user to begin exploiting imagery almost immediately
    - Even at constrained bandwidths
  - Scalable and fully interoperable within the DoD and IC
- At the core of AGILE are ***JPEG2000***, XML, and NITFS
  - Standards to which Data Providers across both National and Tactical systems are migrating
  - AGILE does not use or create any proprietary formats or data

# The AGILE COTS Product Suite

- **AGILE FIST**
  - Library transcoder/server
- **AGILE FIRE**
  - Geospatial exploitation client
- **AGILE LITE**
  - Hand-held client
- **AGILE WEB**
  - Java-based thin client

# AGILE Architecture



# AGILE Provides Seamless Migration from Legacy-to-Future

- Supports current and future NSGI and DCGS data sets
- Uses "On-the-Fly" transcoding from legacy formats to an NITF/JPEG2000 format
- Supports single band and multi/hyper-spectral imagery, elevation data, and motion imagery at any quality - from numerically lossless to any compression level

## Original Image:

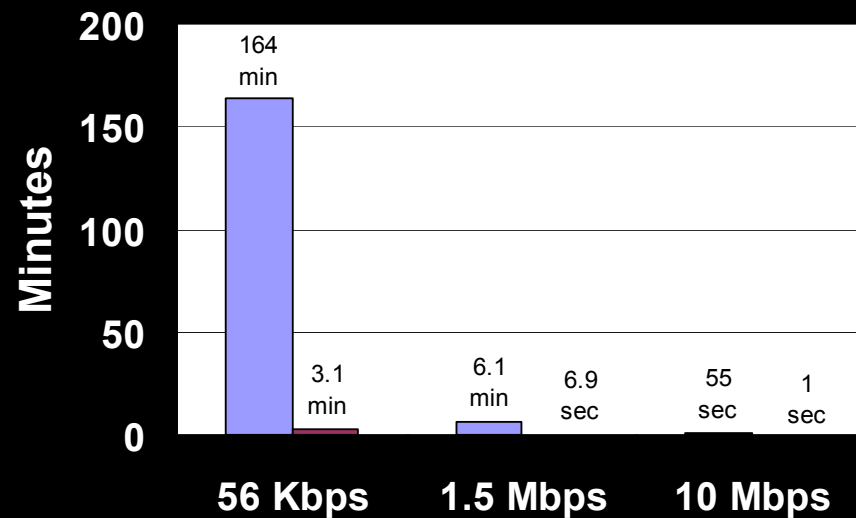
- 13.5K x 13.5K x 24 bits/pixel (530MB)
- JPEG2000 compressed 10:1 (53 MB)
- R4 image layer transmitted (999 KB / 1.8%)

## R2 image sub-frame (295KB / 0.5%)

## R0 image sub-frame (30KB / 0.06%)

## Transmission Time

■ Entire JPEG DCT File ■ JPEG2000 Data Shown



Data Transfer

5

4

3

2

1

MB

# Features – AGILE FIST

(Fast Interactive Server Technology)

## ■ Release 1.0:

- File ingest includes NITFS, TIFF, .JPG, and .JP2
- Multi-threaded transcoding (conversion to JPEG2000)
- Local NITFS/JPEG2000 and .JP2 file storage
- Interactive streaming of imagery and XML metadata to clients
  - Progressive transmission of wavelets that can be reconstructed with spatially-varying resolution and quality levels
  - Data transmission can be halted/modified at any time by user
- Server administration services
- Operation over a broad range of communications bandwidths on both land-based and wireless networks
- Windows and UNIX platforms supported
- FIST's modular design allows customers to license only the capabilities that they need (e.g. transcoding)

# Features – AGILE FIRE Client

(Fast Interactive and Robust Exploitation)

## ■ Release 1.0:

- Access to local .JP2 and Motion JPEG2000 files
- Interactive request/receipt of imagery from FIST server
  - With spatially varying resolution and quality
  - Component (band) selection capability
- Imagery display and manipulation capabilities, including...
  - Wavelet and pixel based image enhancements
  - Integrated IDL functions
  - Roam/zoom, dynamic path following, etc.
  - Annotation
- Collaboration with other FIRE and LITE clients
- Ability to receive, display, and utilize XML metadata
- Local .JPG and .JP2 file storage
- Print capability
- Windows supported (Desktop, Laptop, and Tablet PCs)



# Features – AGILE LITE Client

(Light Integrated Tactical Exploitation)

## ■ Release 1.0

- Access to local .JP2 files
- Interactive requesting of imagery from FIST server
  - With spatially varying resolution and quality
  - Component (band) selection capability
- Imagery display and manipulation capabilities, including...
  - Wavelet and pixel based image enhancements
  - Roam/zoom
  - Annotation
- Collaboration with other FIRE and LITE clients
- Ability to receive, display, and utilize XML metadata
- Operation over limited bandwidths on wireless networks
  - 802.11b wireless networking supported
- Windows CE supported (PDA)

# AGILE Availability

- AGILE FIST ( Library transcoder/server)
  - Release 1.0 available in Fall 2003
- AGILE FIRE (Geospatial exploitation client)
  - Release 1.0 available in Fall 2003
- AGILE LITE (Hand-held client)
  - Release 1.0 available in Fall 2003
- AGILE WEB (Java-based thin client)
  - Release 1.0 available in Spring/Summer 2004

# AGILE Benefits

- Reduced time to exploitation
- More efficient use of bandwidth
- Reduced storage requirements (and costs)
- Standards-compliant architecture
- Compatible with existing imagery sources

# For more information, please contact...

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# Backups...

# Kodak and JPEG2000

- Kodak has held key roles in ANSI and ISO JPEG2000 committees
- Kodak has invested a great deal into JPEG2000 and Motion JPEG2000 technologies over the last 7 years
- Kodak's Commercial and Government Systems (C&GS) business unit is developing a suite of NITFS/JPEG2000 COTS products, specifically for the DoD and Intelligence Communities . . .
  - Imagery library transcoder and server solutions
  - Thick, thin, and hand-held client solutions
- Kodak's subsidiary, Research Systems, Inc. is taking the lead on developing these COTS products
  - Leverages experience gained from creating IDL, ENVI, etc.

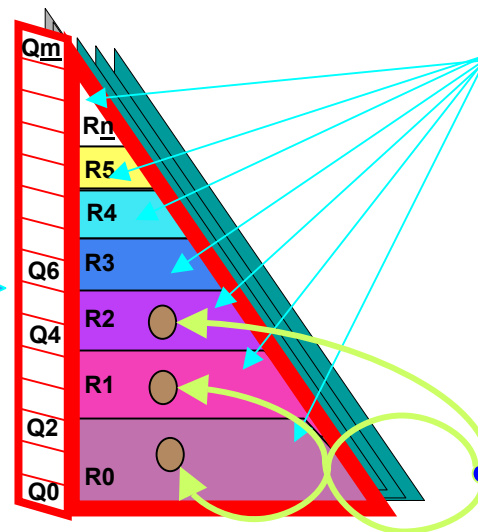
# AGILE Technical Approach

**Original Product/Image(s)**  
(EO, IR, SAR),(MSI, HS)  
(Raster, Elevation),(Motion )



**Pixels-to-wavelets**

**30 % reduction in data/band to  
meet visually lossless NIIRS  
requirements**



- n Resolution Levels and m Quality Levels embedded within one compressed stream (within NITF 2.1 wrapper)
- Applies to single band or multi-band imagery or elevation data
- Enables streaming, search and visualization of data across tactical communications, downlinks, and devices
- Access to multiple, arbitrarily shaped ROIs at any resolution/quality defined by user, on-the-fly